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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/06/2000

Shinji Nozaki

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12/27/2004

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EXAMINER

PHUNKULH, BOB A

ART UNIT

PAPER NUMBER

2661

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/656,138

Applicant(s)

NOZAKI ET AL.

Examiner

Bob A. Phunkulh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-5, 8 and 23-27 is/are allowed.
- 6) ☒ Claim(s) 1, 6, 7, 9-22 and 28-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This communication is in response to applicant's 08/05/2004 amendment(s)/response(s) in the application of **NOZAKI et al.** for "**NETWORK RELAY APPARATUS**" filed 09/06/2000. The amendments/response to the claims have been entered. No claims have been canceled. No claims have been added. Claims 1-43 are now pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6-7, 9-16, 28-30, 34-36, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by *Dobbins et al.* (US 5,684,800), *Dobbins*.

Regarding claim 1, *Dobbins* discloses a network relay apparatus for connecting networks to each other, which are logically constructed, comprising:

a reception port (ports 1-3 ; see figure 5);

a transmission port; and

relay means for relaying a multicast packet between logically constructed networks based upon reception information containing reception port information related to a port which receives the multicast packet (access port), and reception source network information related to a first network functioning as a reception source of said

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multicast packet (source address); and also transmission information provided in correspondence with said reception information and containing transmission port information related to a port through which said multicast packet is transmitted, and transmission source network information related to a second network functioning as a transmission destination (destination address) of said multicast packet (**see col. 1 lines 59 to col. 2 line 14; col. 6 lines 13-45**).

Regarding claim 6, *Dobbins* discloses a network relay apparatus as claimed in claim 1 wherein: said registering means additionally registers information related to a multicast packet into said transmission information when the multicast packet is received (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step 41); if a call processor can not supports the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21**).

Regarding claim 7, *Dobbins* discloses a network relay apparatus as claimed in claim i wherein: said transmission information includes: rewrite information which is provided with a multicast packet and is rewritten when the multicast packet is relayed (add a VLAN header to unsupported packet, **see col. 3 lines 6-25**).

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Regarding claim 9, *Dobbins* discloses a network relay apparatus as claimed in claim 1 wherein: the network relay apparatus is further comprised of: a learning process unit for forming both said reception information and said transmission information while the multicast packet is relayed (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step 41); if a call processor can not supports the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21).**

Regarding claim 10, *Dobbins* discloses the reception information includes: a destination address and a transmission source address, which are related to such a multicast packet which has been registered as said reception information; and packet discrimination information capable of discriminating as to whether or not said multicast packet registered as said reception information has already been registered into said reception information (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step 41); if a call processor can not supports the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21).**

Regarding claim 11, *Dobbins* discloses the packet discrimination information includes: reception source network information related to a network of a reception source concerning the multicast packet which is registered into said reception information; and reception port information related to a multicast packet received port (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step 41); if a call processor can not supports the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21**).

Regarding claim 12, *Dobbins* discloses a relay apparatus (a switch, see figure 3) comprising:

a reception processing unit for performing a multicast packet allocating operation in response to a sort of a multicast packet (in ports 80 and management agent 87);

a relay processing unit for performing a relay processing operation capable of transmitting the multicast packet allocated by said reception processing unit to a transmission destination (call processor 89, see figure 3); and

a learning process unit (discovery agent 88, see figure 3) for performing such an operation that while said relay processing operation by said relay processing unit is carried out, information related to said transmitted multicast packet is registered into a predetermined table (see col. 4 lines 27-43; and figure 3).

Regarding claim 13, *Dobbins* discloses a relay apparatus (a switch 11 or 12 or 13 or 14) for constituting a VLAN (Virtual Local Area Network 100 or 5 or 20, see figure 5), comprising:

a VLAN table including:

a discrimination number for a VLAN to which another relay apparatus connected to an own relay apparatus belongs;

port information related to a port connected to said another relay apparatus, which is provided in correspondence with said discrimination number; and

valid port information provided in correspondence with said port information, capable of discriminating as to whether or not said another relay apparatus owns a learning function by which information related to a multicast packet is registered into a predetermined table similar to an own relay apparatus; and in which when said another relay apparatus owns said learning function, said port is regarded as a valid port and is registered (see figures 3 and 6; and col. 7 lines 1-18).

Regarding claim 14, *Dobbins* discloses a relay apparatus as claimed in claim 13 wherein: said valid port information is registered as a valid port, since the own relay apparatus transmits/receives a signal to/from said another relay apparatus (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the

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packet was received on an access port (step 41); if a call processor can not supports the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21).**

Regarding claim 15, *Dobbins* discloses a relay apparatus as claimed in claim 14 wherein: said signal corresponds to such a packet exclusively used in said relay apparatus (see col. 4 lines 37-43).

Regarding claim 16, *Dobbins* discloses a relay apparatus as claimed in claim 15 wherein: said signal corresponds to such a signal produced by adding specific information to a header of a packet (adds a VLAN header for unsupported protocol, see col. 3 lines 6-25).

Regarding claim 28, an information relay apparatus for constituting a logical network, comprising:

a multicast relay destination registering table into which when a multicast packet is received from more than one network which are physically identical to each other, but are logically different from each other, one network among said networks physically identical to each other, but logically different from each other is registered as a representative network (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step

41); if a call processor can not supports the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21).**

Regarding claim 29, *Dobbins* discloses an information relay apparatus for constituting logical networks and for relaying a multicast packet received from a first logical network to a second logical network, comprising:

- a reception port (see figure 5);
- a transmission port (see figure 5); and

relay means operated in such a manner that said multicast packet transmitted from said first logical network is received via one port from another information relay apparatus which similarly constitutes logical networks, and said multicast packet is transmitted via the other port to another logical network containing either said first logical network or said second logical network (each SFPS and the end systems attached to the switch comprises of a logical network, a multicast packet receives from a reception port is transmitted to another logical network see figure 5).

Regarding claim 30, *Dobbins* discloses an information relay apparatus for relaying a multicast packet among logically formed networks, wherein: in such a case that similar to an own information relay apparatus, another information relay apparatus connected to the own information relay apparatus owns a learning function related to a

relay process operation of a multicast packet, both said own information relay apparatus and said another information relay apparatus constitute a logical network which is exclusively employed so as to perform the multicast relay process operation (when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step 41); if a call processor can not support the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21**).

Regarding claim 34, *Dobbins* discloses a relay apparatus for connecting networks to each other, which are logically constructed, comprising:

a learning table into which transmission destination information of transmission destinations are registered, while a multicast packet is relayed, an own relay apparatus being required to transmit the multicast packet to said transmission destinations; and

a learning process unit (discover agent 88, see figure 3) for relaying said multicast packet to the transmission destinations registered in said learning table by comparing both a destination address and a transmission source address of a multicast packet received from one network among said networks with said learned transmission destination information which is registered in said learning table (see col. 4 lines 27-43; and figure 3).

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Regarding claim 35, *Dobbins* discloses a relay apparatus for connecting networks to each other, which are logically constructed, comprising:

a learning table into which information used to relay a multicast packet is registered; and

a learning process unit (discovery agent 88, see figure 3) for relaying said multicast packet to ports contained in the learned information registered in said learning table by comparing both a destination address and a transmission source address of a multicast packet received from one network among said networks with said learned information which is registered in said learning table (see col. 4 line 27-43 and figure 3).

Regarding claim 36, *Dobbins* discloses an apparatus (switch 11 or 12 or 13 or 14, see figure 3) comprising: a port;

and a multicast information table (database 88) including

a reception information area into which both destination information and transmission source information contained in a multicast packet received from a first logically-constituted network are registered in correspondence with network information related to said first network; and

a transmission information area into which a second logically-constituted network is registered in correspondence with a port connected to said second network, a multicast packet being transmitted to said logically-constituted second network (see figure 3; and col. 4 lines 27-62).

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Regarding claim 39, *Dobbins* discloses a packet relay system comprising:

- a plurality of terminals (end systems 20A-20L, see figure 5);
- a plurality of networks arranged by logically combining said plurality of terminals (a network comprises of end systems and a switch, see figure 5); and
- a relay apparatus connected among said plurality of networks, including:
 - a learning table into which transmission destination information of transmission destinations are registered, while a multicast packet is relayed, an own relay apparatus being required to transmit the multicast packet to said transmission sources; and
 - a learning process unit (discovery agent 88, see figure 3) for relaying said multicast packet to the transmission destinations registered in said learning table by comparing both a destination address and a transmission source address of a multicast packet received from one network among said networks with said learned transmission destination information which is registered in said learning table (see col. 4 line 27-43 and figure 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-22, 31-33, 37-38, 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dobbins* in view of *Chen* et al. (US 5,831,975), hereinafter *Chen*.

Regarding claim 17, *Dobbins* discloses an information relay apparatus (switch 11 or 12 or 13 or 14) for relaying information in a plurality of logical information networks (VLANs), comprising:

a multicast relay destination registering table into which a relay destination in a predetermined multicast relay process operation is registered (col. 7 lines 1-18, see figure 6); and

multicast relay means operated in such a manner that when data is relayed from networks which are physically identical to each other, but are logically different from each other to a same destination with reference to said multicast relay destination registering table (see figure 3).

Dobbins fails to disclose data having a same content are relayed only one time to said same destination with respect to a relay destination.

Chen, on the other hand, teaches the simplest approach is termed flooding or truncated broadcast. Packets are flooded to all routers in the network and the routers have the responsibility of multicasting the packets within their local subnets. Duplicate packets are discarded by each router (see col. 2 lines 31-46).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to cause *Dobbins'* switches to forward one or a pre-selected set of packets to it destination when receiving multicast packets having the same content and destination in order to avoid overloading the network capacity.

Regarding claim 20, *Dobbins* discloses the networks which are physically identical to each other, but are logically different from each other include: a logical network which is exclusively provided in order to execute a multicast relay process operation (see figure 5).

Regarding claim 21, *Dobbins* discloses a multicast packet is received from more than one network which are physically identical to each other, but are logically different from each other, one network selected from more than one network which are physically identical to each other, but are logically different from each other is registered as a representative network in said multicast relay destination registering table (see figure 6; and col. 7 lines 1-18).

Regarding claim 22, *Dobbins* discloses the multicast relay means receives a multicast packet from said network registered as the representative network, said multicast relay means relays said received multicast packet with respect to transmission destinations which are registered in said multicast relay destination registering table (see col. 4 lines 37-43).

Regarding claims 18, 19, *Dobbins* discloses an information relay apparatus for relaying information in a plurality of logical information networks, comprising:

a reception port;

a transmission port; and multicast relay means for receiving/transmitting only one time, one of multicast packets from information networks which are physically identical to each other, but are logically different from each other after a first multicast packet has been received from said information networks, and thereafter, a preselected time duration has passed.

Regarding claim 31-33, 37-38, and 40, *Dobbins* discloses a packet relay system having a plurality of logically-arranged logical networks and for relaying a multicast packet between said logical networks, comprising: an apparatus corresponding to a destination of a multicast packet; and a relay apparatus for receiving a plurality of multicast packets directed to said apparatus, and for transmitting to said apparatus (see figure 5).

Regarding claim 41, *Dobbins* discloses a packet relay system comprising: a plurality of logically-arranged logical networks (see figure 5); and a relay apparatus (switch 11 or 12 or 13 or 14) connected to said plurality of logical networks, for transmitting a single multicast packet to said plurality of logical networks, whereby said packet relay system relays the multicast packets between the logical networks.

Regarding claim 42, *Dobbins* discloses a packet relay method for relaying a multicast packet between logically-arranged logical networks (VLAN network have plurality of logical networks, see figure 5),

wherein: a plurality of multicast packets; and in a case that a plurality of logical networks are present in an apparatus corresponding to the destination of said received multicast packets, one of said received multicast packets is transmitted to said apparatus.

Regarding claim 43, *Dobbins* discloses a packet relay method for relaying a multicast packet between logically-arranged logical networks, wherein: a plurality of multicast packets; and in a case that a plurality of logical networks are present in an apparatus group corresponding to the destination of said received multicast packets, a preselected set of said received multicast packets are transmitted to said apparatus group.

Dobbins fails to disclose the multicast packets having the same contents and same destination, and forwarding one or a pre-selected set of packets to the destination (duplicate packets).

Chen, on the other hand, teaches the simplest approach is termed flooding or truncated broadcast. Packets are flooded to all routers in the network and the routers have the responsibility of multicasting the packets within their local subnets. Duplicate packets are discarded by each router (see col. 2 lines 31-46).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to cause *Dobbins'* switches to forward one or a pre-selected set of packets to its destination when receiving multicast packets having the same content and destination in order to avoid overloading the network capacity.

Allowable Subject Matter

Claims 2-5, 8, 23-27 are allowed.

Response to Arguments

Applicant's arguments filed 08/05/2004 have been fully considered but they are not persuasive.

In response the applicant's arguments in page 23, *Dobbins* discloses that a switch 11 or 12 or 13 or 14 is connected to a plurality of VLAN networks 17, 18, and 19. In col. 6 lines 14-20, *Dobbins* discloses the following:

During real time operation of the system, a first switch (for example switch 11) receives a broadcast or multicast packet that it cannot process with a protocol-specific call processor. The switch will encapsulate the original packet and insert a VLAN header containing a list of VLAN-IDs for the source end system (see FIG. 8), before flooding the encapsulated (VLAN) packet out the multicast channel 16 to all other switches. For example, if first switch 11 receives a broadcast packet from first end system 20B, switch 11 returns from its end system table (FIG. 6) that VLAN 100 and VLAN 20 are associated with source end system 20B. First switch 11 will insert VLAN 100 and VLAN 20 into the VLAN header (FIG. 8). In addition, first switch 11 determines the port masks for VLAN 100 and VLAN 20 from its port table (FIG. 7), and then sends the original broadcast packet out all access ports of the first switch in VLAN 100 or VLAN 20 (except for the source port 2); in this case, the original packet is sent out access port 1, which connects to end system 20A, also in VLAN 100, and out access port 3, which connects to end system 20C, also in VLAN 20 (col. 6 lines 13-32).

As example given above the end system 20B belongs to VLAN 100 and VLAN 20. The end system 20B can multicast packet between VLAN 100 and VLAN 20 via switch 11. Therefore, *Dobbins* discloses a network relay apparatus (i.e. switch 11 or 12 or 13 or 14) for connecting networks (i.e. VLANs 17, 18, 19) to each other that includes relays means for multicasting the received packet between the logically constructed networks (VLANs 17, 18, 19).

In response to the applicant's argument in page 24, *Dobbins* discloses when a first switch receives a broadcast or multicast packet (step 40), it first determines whether the packet was received on an access port (step 41); if a call processor can not support the packet type the packet is passed to the VBUS call processor (step 45); the call processor then updates the End System/VLAN table with the access port and end systems heard (step 49), **see figures 11 and 12 and col. 8 line 60 to col. 9 line 21**). Therefore, *Dobbins* discloses a learning function by which information related to the received multicast packet is registered (update) into the end system/VLAN table.

In response to the applicant argument in page 25, *Dobbins* discloses the following:

During real time operation of the system, a first switch (for example switch 11) receives a broadcast or multicast packet that it cannot process with a protocol-specific call processor. The switch will encapsulate the original packet and insert a VLAN header containing a list of VLAN-IDs for the source end system (see FIG. 8), before flooding the encapsulated (VLAN) packet out the multicast channel 16 to all other switches (col. 6 lines 13-20).

The combination of encapsulating the original packet and inserting a VLAN header result in rewriting the information when the multicast packet is relayed.

Conclusion

Any response to this action should be mailed to:

The following address mail to be delivered by the United States Postal Service (USPS) only:

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Commissioner for Patents

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P. O. Box 1450
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or faxed to:

(703) 872-9306, (for formal communications intended for entry)

Or:

The following address mail to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, Hand Delivery, etc.) as follow:

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Arlington, VA 22202.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Bob A. Phunkulh** whose telephone number is **(571) 272-3083**. The examiner can normally be reached on Monday-Tuesday from 8:00 A.M. to 5:00 P.M. (first week of the bi-week) and Monday-Friday (for second week of the bi-week).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor **Kenneth Vanderpuye**, can be reach on **(571) 272-3078**. The fax phone number for this group is **(703) 872-9306**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bob A. Phunkulh



TC 2600

Art Unit 2661

December 22, 2004

**BOB PHUNKULH
PRIMARY EXAMINER**